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PATENT SPECIFICATION



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COMPLETE SPECIFICATION

Improvements in Supports for the Elastic in Ball Games with Attached Ball

I, RUDOLF HEIMERS, a Mexican citizen, of Calle Madero No. 16, Colonia de Tlacopac, Mexico City, Mexico, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The invention refers to improvements 10 in the supports of the elastic in ball games with attached ball, in which the ball secured to the end of a long elastic wound around two separated sets of rollers, can be thrown for a great distance 15 and returns to its starting point. The invention has for its object certain improvements in the construction of the casings or supports enclosing the sets of rollers, especially in the way of attaching said 20 casings or supports to the devices for throwing or striking the ball, and in the means for increasing or reducing the length of the elastic so as to adjust and vary its tension and to dispose of a reserve 25 of elastic in case of rupture of the thread.

The characteristic features of the invention are described in the following specification and shown in the accompanying drawings, in which similar reference numerals indicate identical parts throughout the figures shown.

Figure 1 represents the device for winding and supporting the elastic, applied to a tennis racket, shown from 35 the back.

Figure 2 is a side view of the same racket.

Figure 3 shows on a bigger scale a set 40 of rollers, its casing with clip for fixing it to the handle of the racket, and the wheel for winding the excess of elastic.

Figure 4 shows the same parts viewed from another side.

Figure 5 is a sectional view of the 45 casing for the set of rollers with its guiding slots.

Figure 6 is a top view of another set of rollers, with side arms for securing it to the top of the racket, and with friction- 50 reducing means for the passage of the elastic.

Figure 7 is a front view of the device

shown in figure 6, with a wire frame for protecting the elastic.

Figure 8 is a cross sectional view of the 55 device shown in figures 6 and 7.

Figure 9 shows the same device with an extension for attaching it to a round bat.

Figures 10 and 11 are longitudinal 60 cross sections in two directions of a hollow tube for another ball game, with the rollers conducting the elastic mounted within the tube.

Figure 12 is a front view of a device for playing football with the ball 65 attached.

Figure 13 is a side view of the device shown in figure 12, partially in cross section.

Figures 14 and 15 are views, respectively from the side and from above, of 70 a modification of the device shown in figures 6 and 7, adapted to be attached to the top of a base ball bat.

The sets of grooved rollers 1 and 1^a, 75 around which is wound the elastic 2 in a number of turns, are mounted to rotate on shafts 3, the ends of which pass through the sides of U-shaped members or casings 4. Between these sides are 80 mounted from the inside the bent extremities of a curved plate 5 provided with slots coinciding with the grooves of the rollers 1 and 1^a, and forming a number of tongues 6 extending around the edges of each two adjacent rollers, said tongues 85 extending to the bottom of the U-shaped members 4 on the side toward which the turns of the elastic stretch from one set of rollers to the other set. On the opposite 90 or back side, the curved plate 5 is spaced from the bottom of said member for a sufficient distance to permit the placing of the elastic around the rollers. The tongues 6 form thereby a guard around 95 the edges of adjacent rollers, as shown in figures 3, 4, 6, 7 and 12, in order to prevent the elastic from leaving the grooves in said rollers. In case of rupture of the elastic, the free end of said elastic, on returning in a direction not exactly perpendicular to the rollers, will generally be caught and held in the first turn, jamming between the edge of the roller and 100

[Price \$1]

the guard 6 surrounding said edge completely or partially. Small projections or washers 7 (figure 5) between the rollers reduce the friction during their rotation.

5 The rollers 1, with their casing and guard as described, are secured to the handle of the racket shown in figures 1 and 2 by means of a clip 8 of more or less semi-circular shape provided on the base 10 of the casing 4 and having its extremities doubled or bent in the form of hooks 9 to be united by rubber bands 10 (figure 2), placed around the opposite side of the handle and which, owing to their tension 15 and adhesive properties, firmly secure the clip 8 to the handle, upon being stretched repeatedly between the hooks 9.

The means for winding the excess length of elastic comprises, in the racket 20 of figures 1 and 2, a big wheel or drum 11, with a handle 12, the shaft of this wheel passing preferably with its threaded end through a nut 13 disposed within the branches of one of the hooks 9. 25 When this shaft is loosened, the wheel 11 can be rotated, and when its head 14 is screwed down, it is held firmly, so that the elastic may be wound and unwound thereon or may be held wound at any desired tension. In order to bring the wheel 11 as close as possible to the racket handle, the hook 9 enclosing the nut 13 may enter into a cavity provided in the respective side of the wheel 11.

35 In the embodiment shown in figures 8 and 9, the bottom of the casing 4 supporting the rollers 1^a has a lateral extension bent at right angle, on which is placed and secured the U-shaped bottom of another casing 15, between the sides of which are disposed two parallel rollers 16 spaced one from the other and which, together with another set of rollers 17, also spaced and placed transversally to the 40 rollers 16, form the device for reducing the friction of the elastic passing through the centre of the four crossed rollers. The rollers 17 are supported by a separate casing 18 disposed between the sides of the casing 15 and provided with a hole 15^a (figures 7 and 8), through which passes the elastic before it enters the friction-reducing means. In the same figures 7 and 8 is also shown a guide for conducting 45 the elastic passing from the central roller of the set to the hole 15^a, and which consists of two extensions 5^a of the curved guard 5, which bear with their extremities against the bottom of the casing 4 and between which passes the elastic.

In order to secure the support described of the rollers 1^a and of the casing containing the friction-reducing means, to the hoop of the racket, two arms 19 have been 55 provided which extend laterally from the

part bent at right angle 4^a of the casing 4, and each of which carries two or more doubled tongues 20 and 20^a provided at opposite sides, forming hooks for attaching other rubber bands 21 (figures 1 and 70 2) which surround the hoop. This form of attachment provides a rigid and at the same time resilient union which does not deteriorate the finish of the racket and which, owing to its elasticity, endures 75 occasional blows from the returning ball, as it gives way on receiving the blow and returns instantly to its former position. Besides, devices of this kind may be attached in a few seconds to any racket 80 and may be taken off rapidly by removing the rubber bands from their hooks.

The guards 22 of steel wire, shown in figure 7 and extending from the sides of the casing 4 and from the upper ends of 85 the casing 15 to the ends of the arms 19, serve to protect these parts against injury caused by the racket striking the ground or by other accidents, but also serve to prevent the loose elastic from being caught 90 in said parts when the racket is handled in a wrong way or when the elastic is used very loose and without much tension as is the case when the ball is to be thrown at a great distance, or for obtaining the 95 different effects on the ball used in real tennis play.

In the embodiment of the invention described, for substituting the game of tennis or for preliminary practice of the 100 game, the balance of the racket need not be altered. A racket provided with the devices described, permits hitting the ball from both sides, notwithstanding the turns of elastic crossing one side, so that reverse 105 strokes may also be executed without difficulty. A racket of this kind not only permits the performance of all the strokes known in tennis play, but also enables the player to put several new effects on the 110 ball, due to the continuous union of the ball with the racket which makes possible a change in the direction of the throw, both of the ball on being thrown and of the ball returning to its starting point. 115

The invention further refers to a number of modifications for a variety of other ball games, in which the free ball is substituted by an attached ball. The supports and devices for maintaining the 120 elastic within the grooves of its rollers, and for securing them to the different instruments or implements used for throwing the ball, only differ in some small details from those already described and 125 adapted for tennis rackets, and their function is the same whether used for golf, hockey, base ball, foot ball, the Spanish games played with flat wooden bats or with woven baskets attached to the hand. 130

or other similar kinds of ball games.

According to the characteristics of each of these games, the additional parts: (1) casings for the friction-reducing means for the elastic; (2) sets of rollers for the elastic, and (3) winding means for the excess of elastic, are either adapted directly to the outside or inside of the ball-throwing device, or one part of them is attached to the instrument and the other part to points distant from said instrument, for instance to the body of the player, to the ceiling, to the ground, and even to points entirely removed from the player.

The first case occurs with the tubes or bats for striking the ball and with the tennis racket, as described before, and in general with all the other ball games in which bats or similar implements are used, such as base ball, hockey, the wooden bats for the Spanish game of "pelota" and so forth.

The second case presents itself in the Spanish game of ball played with a long curved basket attached to one hand of the player and with which the ball is thrown and caught, in which game, due to the curved shape of the basket, there can only be made use of several friction-reducing devices, with their guides, placed on the outside of the basket, while the elastic itself, before entering these devices, passes around the sets of rollers 1 and 1^a fastened to the body of the player, where there are also the means for taking up the excess length of the elastic.

The third case occurs especially by adapting the invention to the game of football, as will be described later, in which it is necessary to move the arms and legs freely, and also in the game of golf, in which the plurality of differently shaped clubs used does not permit the adaptation of the devices described to each one of the clubs.

Several of these applications have been shown in figures 9 to 15. Figure 9 shows, partially in cross section, the device represented in figure 8 and used for the tennis racket, with the difference that the casing 4 carries on its bent part 4^a an extension or arm 4^b directed downwardly, so as to enable the device to be attached to the end of a round bat or similar instrument. In this case, the rubber band passing around the hooks 23 provided at the ends of the curved arms 24 united with said casing, also pass with their turns over the extension 4^b and presses it against the bat.

A similar construction is illustrated in figures 14 and 15 and adapts itself especially to the extremity of a base ball bat. Below the casing 4 supporting the rollers, two curved arms 25 with hooks at

their ends are provided, and on the opposite side there are other two arms 26 directed downwardly. A curved guard 27 made of wires passes through the casing 4 and afterwards extends rearwardly, 70 around the arm 26, its ends being also doubled in form of hooks. The rubber band passes from the forward hooks of the arms 25 to the hooks of the guard 27, over the arms 26, pressing the device firmly 75 against the bat. There may also be provided another guard of curved wire passing around the top of the sides of the box 15, on both sides, and united with the ends of the wire 27, in which case the arms 26 80 may be omitted.

In figures 10 and 11 are shown rollers 1 and 1^a, with their guards 5 and guides 6, mounted between two strips 29^a introduced in a tube 29. To the upper end of 85 this tube is affixed a hollow mouth piece 30, in the bottom of which are placed the friction-reducing means composed of the crossed rollers 16 and 17. A hole in a transversal division 31 below said rollers 90 serves as a guide for the elastic connected to the ball, after it has been wound a number of times around the rollers of both sets. The two hooks 32 and 32^a serve to support a reserve length of elastic. For 95 winding the excess of elastic or for giving it the desired tension, the cylinder 34, on which the end of the elastic has been wound, is rotated by means of the lower mouth piece 33 of the tube.

Finally, figures 12 and 13 show the invention applied to the game of foot ball. A casing 35 with a middle portion around which the elastic has been wound is suspended from the neck of the player by 105 a leather strap. On one side of the lower part of this casing is mounted the casing 4 supporting one of the sets of rollers, with its corresponding guiding tongues 6. A device in form of a curved box 36 encloses in its upper part the second set of rollers, and below there is a hole, at the back of which are mounted the crossed rollers 16 and 17, serving as friction-reducers. This box 36 is attached to the 110 leg, above the knee, by means of leather straps 37. The elastic starts from the wound portion of the casing 35, passes in a plurality of turns around the rollers 1 and 1^a of the two sets, and leaves through 115 the friction-reducing means 16—17, its end being attached to the ball. The considerable length of the elastic between the two sets of rollers permits the ball to be kicked a long distance, without loosing 120 the complete liberty and control of the arms and legs.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to 130

be performed, I declare that what I claim is:—

1. Supports for the elastic in ball games with attached ball, in which the elastic, generally under tension, is supported between separate wheels or rollers and passes from these to the ball through friction-reducing means, and in which a part or all of the wheels or rollers are surrounded totally or partially by guards which force the elastic to remain within the grooves of said wheels or rollers even if said elastic is loose.
2. Supports for the elastic as claimed in claim 1, in which the friction-reducing means for the elastic, consisting preferably of crossed pairs of rollers, are provided with guiding means which prevent the elastic from being caught between said rollers, their bearings or parts of said bearings.
3. Supports for the elastic as claimed

in claim 1, in which means are disposed on the part carrying both the friction-reducing means and the supporting rollers, which prevent the part of the elastic located between the friction-reducing mean and the ball from penetrating into or between the different members of said part.

4. Support for the elastic as claimed in claims 1, 2 and 3, in which the end of the elastic opposite to the end attached to the ball, is secured to winding means;

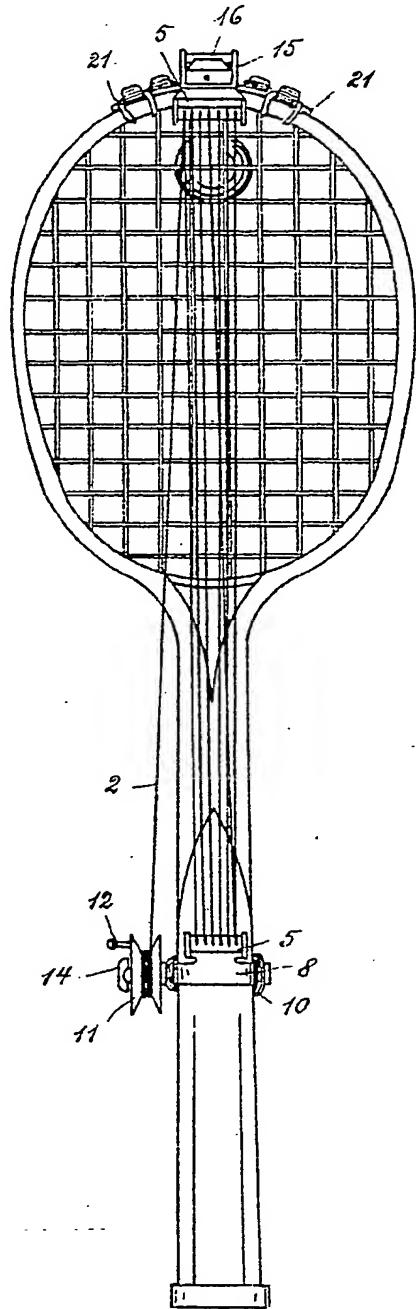
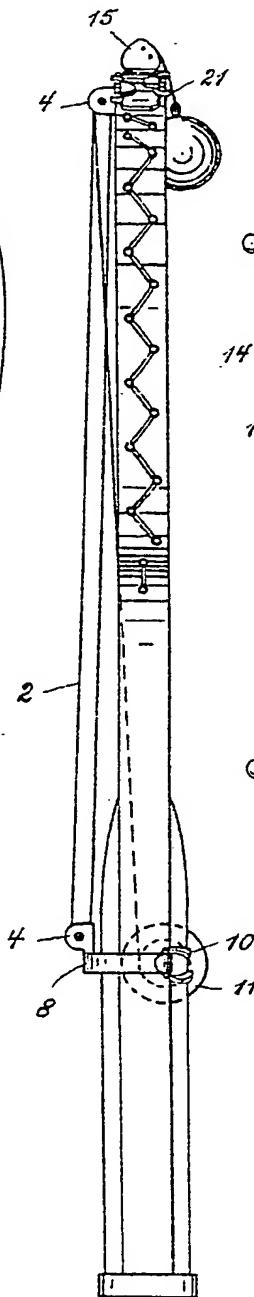
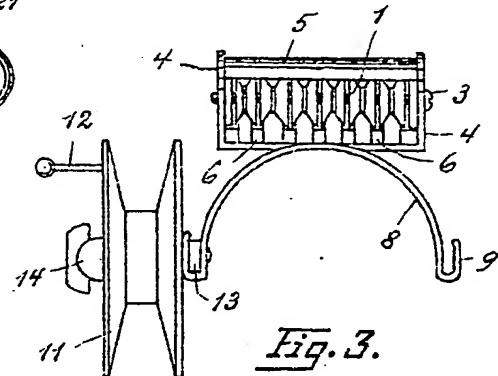
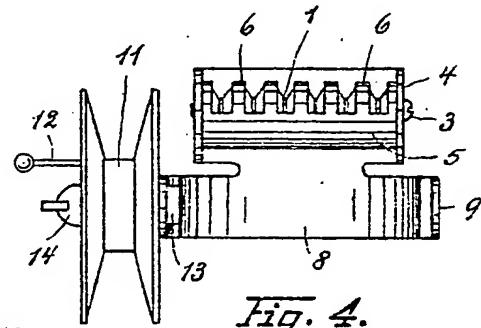
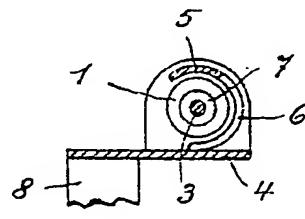
5. Supports for the elastic as claimed in claims 1 to 4, in which the devices for conducting the elastic, for tensioning the elastic and for winding the excess of elastic, separately or all together, are secured with elastic bands to the means for throwing, 40 batting, striking, hitting, kicking, pushing or detaining the ball.

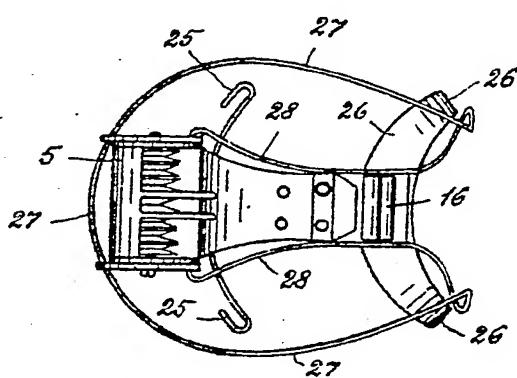
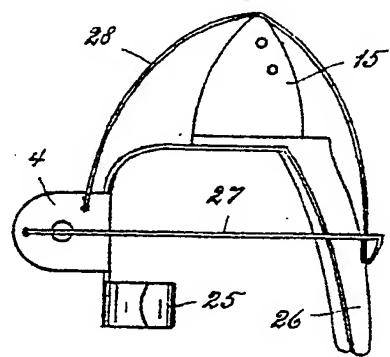
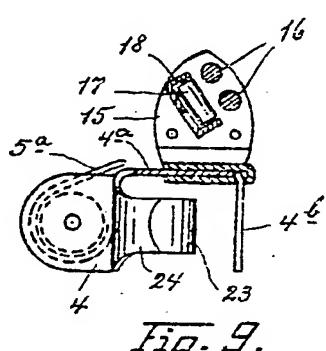
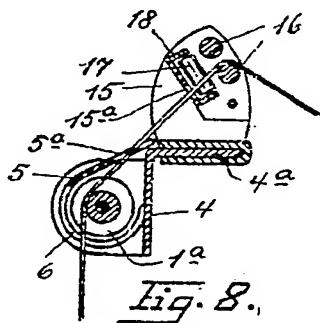
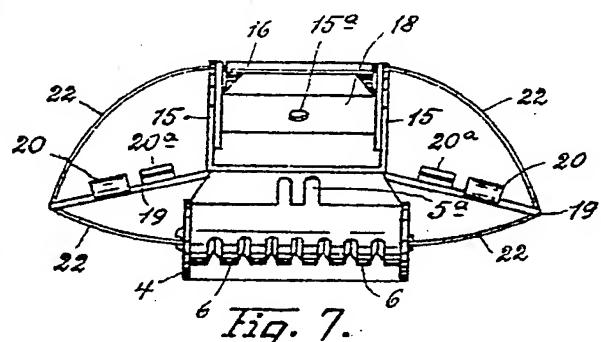
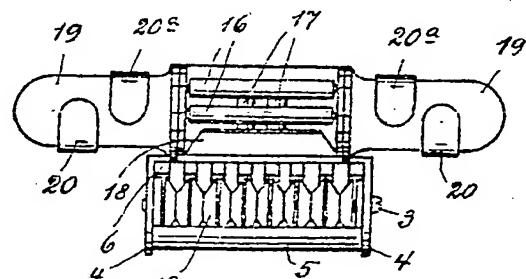
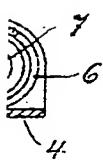
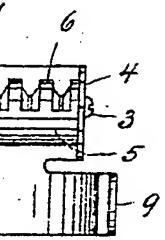
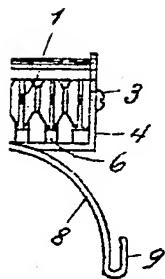
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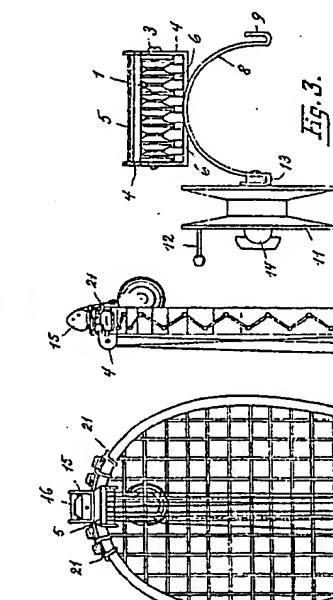
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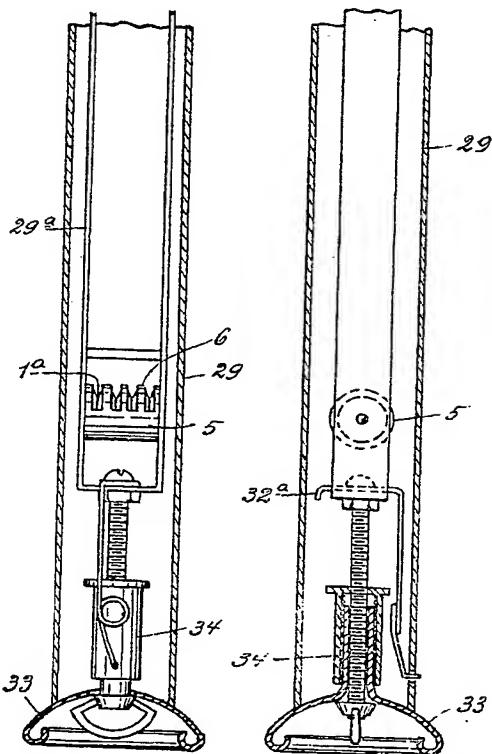
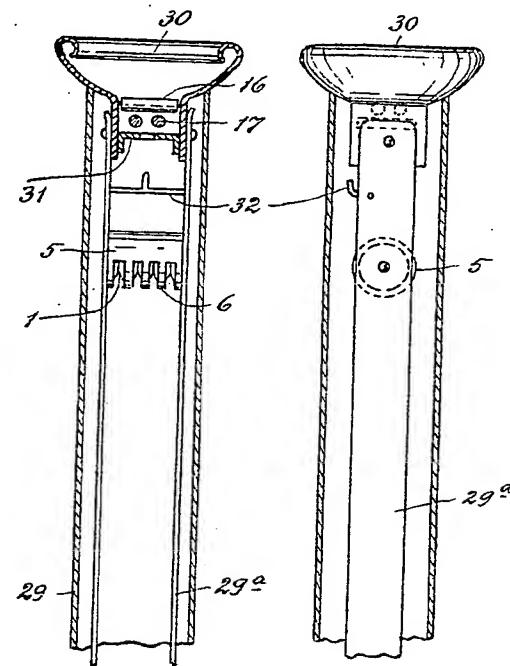
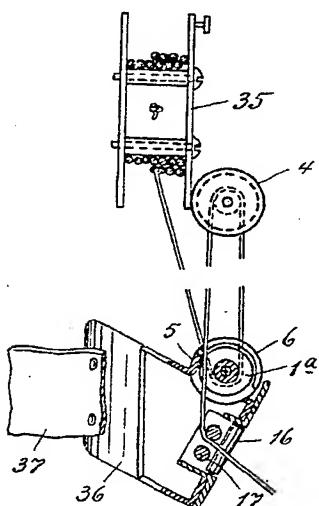
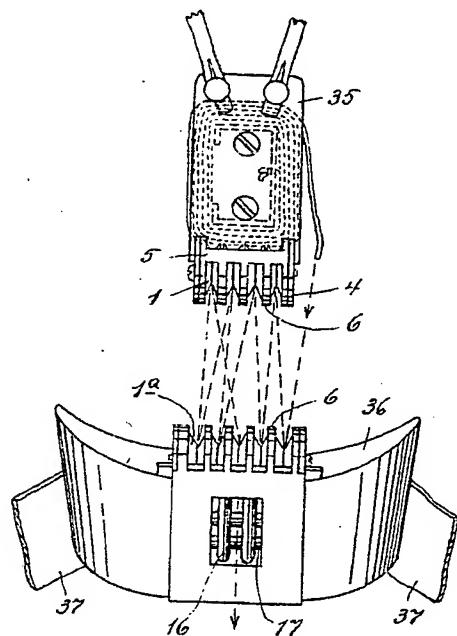
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Fig. 1.Fig. 2.Fig. 3.Fig. 4.Fig. 5.





Fig. 10.Fig. 11.Fig. 12.Fig. 13.